

1 1. An apparatus for automatically controlling an implement towed by a farm
2 machine comprising:
3 a computer on board the farm machine that is capable of receiving
4 information from several sources, recording that information, and controlling multiple
5 functions of the farm machine and the towed implement based on the information
6 received, wherein the computer is programmed to record the previous movements
7 of the farm machine and the portion of a farm field that has not yet been worked,
8 and to automatically direct the towed implement to work the portion of the farm field
9 that has not previously been worked;
10 a Global Positioning System Receiver interconnected with and transmitting to
11 the computer information on the location of the farm machine;
12 implement condition and position sensors interconnected with and
13 transmitting to the computer information on the status of the towed implement and
14 the position of the towed implement relative to the farm machine;
15 a control module interconnected with and receiving control signals from the
16 computer;
17 an implement control apparatus controlling the actions of the towed
18 implement and the position of the towed implement relative to the farm machine and
19 interconnected with and receiving control signals from the control module; and
20 a group of manual controls interconnected with the control module and
21 capable of substituting manual control signals for each of the signals generated by
22 the computer.

1 2. An apparatus for automatically controlling an implement towed by a
2 tractor comprising:
3 a computer on board the tractor that is capable of receiving information from
4 several sources, recording that information, and controlling multiple functions of the
5 tractor and the towed implement based on the information, wherein the computer is
6 programmed to record the previous movements of the tractor and the portion of a
7 farm field that has not yet been worked, and to automatically direct the towed
8 implement from one side to the other side of the tractor;
9 a Global Positioning System Receiver interconnected with and transmitting
10 information on the location of the tractor to the computer;
11 implement condition sensors interconnected with and transmitting to the
12 computer information on the status of the towed;
13 a control module interconnected with and receiving control signals from the
14 computer;
15 implement control apparatus controlling the actions of the towed implement
16 and the position of the towed implement relative to the tractor and interconnected
17 with and receiving control signals from the control module;
18 a group of manual controls interconnected with the control module and
19 capable of substituting manual control signals for each of the signals generated by
20 the computer;
21 a tractor hitch on the tractor for attaching to the tractor a towbar for towing an
22 implement;

1 an implement hitch on the towed implement for connecting the farm
2 implement to the towbar;

3 a tractor hitch sensor interconnected with and transmitting to the computer
4 information on the angular orientation of the towbar to the direction of movement of
5 the tractor; and

6 an implement hitch sensor interconnected with and transmitting to the
7 computer information on the angular orientation of the towbar to the direction of
8 movement of the implement.

9 3. The apparatus of claim 2 wherein the tractor and hitch sensors are
10 potentiometers.

11 4. A method of automatically controlling a towed implement connected to a
12 tractor with a towbar comprising:

13 using a Global Positioning System receiver interconnected with and
14 transmitting information on the location of the tractor to a computer on board the
15 tractor;

16 recording the Global Positioning System location information in the computer;
17 and

18 controlling the position of the towed implement based on information the
19 computer receives from multiple sensors reading the tractor and implement
20 functions and sensors reading the angular orientation of the towbar to the directions
21 of motion of the tractor and the farm implement.

22 5. The method of claim 4 further including using a computer program to
23 record the previous movements of the tractor and the implement and the portion of

1 a farm field that has not yet been worked, and to automatically activate the
2 implement when the implement is located over the portion of the farm field that has
3 not previously been worked.

4 6. A method of automatically controlling a farm machine with an attached
5 implement comprising:
6 using a Global Positioning System receiver interconnected with and
7 transmitting information on the location of the farm machine to a computer on board
8 the farm machine;
9 recording the Global Positioning System location information in the computer;
10 and
11 controlling the position and status of the implement based on information the
12 computer receives from multiple sensors reading the farm machine and implement
13 functions and the position of the implement relative to the farm machine..

14 7. The method of claim 6 further including using a computer program to
15 record the previous movements of the farm machine and the portion of a farm field
16 that has not yet been worked, and to automatically activate the implement when the
17 implement is located over the portion of the farm field that has not previously been
18 worked.

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